

fied in the skills that are relevant to the tasks they are performing or be under training to acquire such skills.

3 Economic

Plantation management is primarily concerned with the establishment and harvesting of tree crops for commercial purposes. The industry operates in a market environment and managers need the freedom to change management practices to meet changing consumer preferences in pursuit of maximising economic returns.

Plantation managers will be free to maximise the economic return from plantation forests provided their operations meet statutory requirements and comply with these Principles.

The costs and benefits of environmental effects should be incorporated into forest industry annual statements.



Steepland Forests, A historical perspective of protection forestry in New Zealand, has been written by Professor Peter McKelvey and is published by the Canterbury University Press. The book has a recommended retail price of \$49.95.

Professor McKelvey is Emeritus Professor of Forestry, University of Canterbury. He is a Fellow and past President of the NZ Institute of Forestry.

In this highly readable book Professor McKelvey first sets the scene by describing the composition and distribution of New Zealand's indigenous protection forests. It is in passing a sad indictment on the human management and use of this priceless natural resource that the 23 million hectares of forest that once existed in New Zealand should have been so drastically and rapidly reduced to the current 6 million hectares in less than a thousand years.

Protection forests in this book are defined as the mountain and hill-country forests of the North and South Islands and Stewart Island that serve the role of holding and protecting the soil resource and influencing the quality and quantity of water that flows from the forests.

Professor McKelvey traces the development of the growing appreciation of the values of protection forests by showing how New Zealand has learned from overseas experiences. China pre 250 BC had regulations to protect forested areas, as had Japan from AD 1600. However it has been more from the experiences and research of European countries and North America that an early understanding of the role of protection forests in New Zealand

has been developed.

Forest surveys have been important in developing an understanding of the distribution and ecology of indigenous forest since Sir Joseph Banks and Dr Carl Solender accompanied Captian James Cook, on his first voyage to New Zealand in 1769. The National Forest Survey of the 1920s and the more ecologically focused surveys that were to follow it were operations of epic proportions that deserve to be remembered for their contribution to developing the first truly national description of our forests. The names of William Colenso, Thomas Kirk, Leonard Cockayne and Jack Holloway stand out as pioneers in their capabilities to sustain surveys in remote and difficult mountain country without the aid of modern transport and in the quality of their analyses in the days before computers. Not that they always got it right. Cockayne in 1928 was only half correct in predicting that deer would become a major damaging impact on indigenous forests while at the same time predicting that possums would inflict no significant damage.

Research Programmes

From the 1950s government agencies, and in particular the New Zealand Forest Service developed research programmes that investigated aspects of forest hydrology and the influence of forests on slope stability. The growing body of knowledge that developed led scientists in the early 1980s to conclude that the primary factors in determining long-term regional rates of erosion were geological processes such as mountain building, and climatic factors such as rainfall and the frequency of torrential storms.

It was concluded that in the longer time scale the role of vegetation in controlling erosion is negligible. This re-evaluation has subsequently led to the view that protection forests should be valued not for their supposed usefulness in producing off-site benefits, but for their own intrinsic values as ecosystems of plants, animals and soils.

The protection forests have themselves required protection from the agents of change. First from the insatiable demands for timber and pastoral land in a developing colony and then protection from the animals that were misguidedly introduced for their recreational and commercial value. Professor McKelvey details the early introduction of deer and possums, the early attempts to control these species and the technologies and strategies that were developed and tested. Of particular interest is the human dimension to this saga. That cultural icon, the good keen man, had his origin in the early deer con-

trol operations of the Department of Internal Affairs. From the days of the "skipper", Major G.F. Yerex, onwards these operations moulded and developed strong personalities. In many respects this book is a tribute to those individuals and their work.

As with other aspects of protection forest management the philosophy of wild-animal control has evolved over time as a better understanding has been gained of the impacts of wild animals and the ecology of the individual pest species. Today the philosophy of extermination has been largely replaced by a more pragmatic approach that recognises that for the present time in most situations total removal is impossible to achieve, and that management must focus on strategies that determine and achieve numbers of animals that can be tolerated according to ecological criteria.

The development of national policies for the management of protection forests can be traced back to the Forests Act of 1921-22 and Leon MacIntosh Ellis. Since then legislation has sought to have recognised the role of protection forests, as they were understood at the time, and to have them protected. Regional policies were also developed and Professor McKelvey records seven case study examples of how different types of problems were addressed.

Natural Transition

A natural transition from research into the role of indigenous forests in the protection of soil and water values was the development of programmes that assessed the suitability of exotic species. Many species were tried, some were successful, and a few, such as lodgepole pine, proved to be too successful. Research trials were undertaken at a number of North and South Island sites and large-scale plantings occurred in Marlborough, Hawke's Bay and Gisborne. Professor McKelvey acknowledges the now increasingly sensitive issue of wilding tree spread. It is somewhat ironic that species selected for their capability to seed and spread prolifically at high altitudes under harsh climatic conditions are now viewed as such a threat to the natural environment when they have started to achieve their intended, albeit possibly misguided, purpose.

Professor McKelvey has written a very well-researched and referenced book that contains a detailed and authoritative account of the history of New Zealand's protection forests and of some of the people who in their myriad parts have played a role in their destiny.

Mike Cuddihy